Appendix A: Interactive Mapping Portal User Guide

The table below provides details of each layer displayed in the SFRA Interactive Mapping Portal, with each row representing a heading in the map legend. The checkboxes can be clicked to display a layer on the portal and the dropdown can be used to display the layer symbology and change the transparency of a layer.

Legend Heading	Description	L1 SFRA Report Section
Authority Information	**Local Authority Boundary** – the boundary of the Central Bedfordshire Local Authority area.	**Section 1.4** SFRA study area
Watercourses	**Statutory Main Rivers** – the Environment Agency (EA) statutory Main Rivers map detailing the watercourses which are designated a Main River by the EA. **All Watercourses** – the OS MasterMap Water Network showing every river, stream, lake and canal in Great Britain. **Canals** – Water Framework Directive (WFD) Artificial Water Bodies Canals Cycle 1, is a polyline shapefile dataset containing WFD attributes that have been collated as defined for the implementation of the WFD. The WFD defines an 'artificial water body' as a body of surface water created by human activity.	**Section 1.4** SFRA study area **Section 4.3** Fluvial flood risk **Section 4.7** Flooding from canals
Flood Zones	**Flood Zones** – Flood Zones 2 and 3a are taken from the EA Flood Map for Planning (January 2025). These Flood Zones show flood risk from rivers and the sea, and do not take into account the effect of any defences, or the possible impacts of climate change. Flood Zone 3b is not mapped in the Flood Map for Planning, therefore this has been derived within the SFRA. **Flood Zone 2** – according to the EA Flood Map for Planning, this layer shows a medium risk: between a 1% and 0.1% chance of river flooding in any given year. **Flood Zone 3a** – according to the EA Flood Map for Planning, this layer shows a high probability: greater or equal to a 1% chance of	**Section 4.3** Fluvial flood risk **Appendix B** – for model details

Legend Heading	Description	L1 SFRA Report Section
	river flooding in any given year. **Flood Zone 3b (modelled)** – Functional Floodplain: this zone comprises land where water must flow or be stored in times of flood, identified as land which would flood with an annual probability of 3.3% AEP (1 in 30 years) with any existing flood risk management infrastructure operating effectively. This layer has been derived where detailed hydraulic modelling exists; the following model outputs have been used. To note, Annual Exceedance Probability (AEP) is the probability, expressed as a percentage, of a flood event occurring in any given year. • Barton - 3.3% AEP • River Flit - 3.3% AEP • Ivel (Combined) - 3.3% AEP • Potton Brook - 3.3% AEP • Mid Ouse Minor Tribs - 3.3% AEP • Elstow Brook - 2% AEP • Leighton Buzzard - 2% AEP • Mid Ouse- Lower Mid Ouse - 2% AEP • Lower Ouse- Upstream Lower Ouse - 2% AEP Where no detailed hydraulic modelling exists, Flood Zone 3a can be used as an indicative Flood Zone 3b extent, and further work should be undertaken as part of a detailed site-specific Flood Risk Assessment (FRA) to refine the extent of Flood Zone 3b. Where the mapping produced by the Level 1 SFRA identifies Flood Risk extents not reflected on the EA flood maps, the Council consider these as areas with critical drainage problems for further investigation.	

Legend Heading	Description	L1 SFRA Report Section
Climate Change Fluvial Extent	**3.3% AEP Central (modelled proxy)** – for all models used in this SFRA, there is no available 3.3% AEP event with climate change, therefore, a pragmatic proxy approach has been used in agreement with the EA. The following model outputs have been used: • Barton, River Flit, Ivel (Combined), Potton Brook - 1.3% AEP • Leighton Buzzard - 1% AEP • Mid Ouse (Minor Tribs and Lower Mid Ouse), Lower Ouse (Upstream Lower Ouse), Cam Rural - Flood Zone 3a • Elstow Brook - 0.5% AEP **1% AEP Central (modelled proxy)** – comprised of the following outputs: • Barton, River Flit, Ivel (Combined), Potton Brook, Lower Ouse (Upstream) - 1% AEP + 25% • Elstow Brook, Mid Ouse (Lower Mid Ouse), Leighton Buzzard - 1% AEP + 20% • Mid Ouse (Minor Tribs), Cam Rural - Flood Zone 2 **1% AEP Higher Central (modelled proxy)** – comprised of the following outputs: • Barton, River Flit, Ivel (Combined), Potton Brook, Lower Ouse (Upstream) - 1% AEP + 35% • Mid Ouse (Minor Tribs), Elstow Brook, Mid Ouse (Lower Mid Ouse), Cam Rural, Leighton Buzzard - Flood Zone 2	**Section 5.3.1** Fluvial climate change **Appendix B** – for model details

Legend Heading	Description	L1 SFRA Report Section
Risk of Flooding Layers	**Risk of Flooding from Rivers and Sea** – the EA Risk of Flooding from Rivers and Sea maps (January 2025) have been generated from the EA's National Flood Risk Assessment (NaFRA) taking account of flood defences and the condition they are in. Each 50m x 50m cell is allocated one of four flood risk likelihood categories: • High risk: each year there is a chance of flooding of greater than 1 in 30 (3.3%) • Medium risk: each year there is a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) • Low risk: each year there is a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%) • Very low risk: each year there is a chance of flooding of less than 1 in 1000 (0.1%) **Reduction in Risk of Flooding from Rivers and Sea** – a spatial dataset that indicates where areas have reduced flood risk from rivers and sea due to the presence of flood defences. **Risk of Flooding from Surface Water** – the EA's Risk of Flooding from Surface Water maps (January 2025) have been generated from the EA's National Flood Risk Assessment (NaFRA) and give an indication of the broad areas likely to be at risk of surface water flooding. The mapping shows the extent of flooding that is likely to occur as a result of rainfall with a 3.3% (1 in 30), 1% (1 in 100) and 0.1% (1 in 1000) chance of happening in any given year. To note, flood extents from the Risk of Flooding from Rivers and Sea and the Risk of Flooding from Surface Water maps are shown in the SFRA Interactive Mapping Portal; however, depth data can also be viewed on the EA's website.	**Section 4.3** Fluvial flood risk **Section 4.4** Surface water flooding **Section 6** Flood alleviation schemes and assets **Appendix E** Summary of flood risk

Legend Heading	Description	L1 SFRA Report Section
Climate Change Surface Water Extent	The Risk of Flooding from Surface Water was uplifted to represent surface water climate change for the following events and scenarios according to the relevant management catchment. For the Colne, Cam and Ely Ouse, and Ouse Upper and Bedford Management Catchments: • **3.3% AEP 2070s Central** with +25% uplift • **3.3% AEP 2070s Upper** with +35% uplift • **1% AEP 2070s Central** with +25% uplift • **1% AEP 2070s Upper** with +40% uplift For the Upper Lee Management Catchment: • **3.3% AEP 2070s Central** with +20% uplift • **3.3% AEP 2070s Upper** with +35% uplift • **1% AEP 2070s Central** with +25% uplift • **1% AEP 2070s Upper** with +40% uplift	**Section 4.5** Surface water flooding **Section 5.3.2** Surface water climate change
Reservoir Extent Layers	**Reservoir Flood Extents** – the EA reservoir flood extents show the predicted flooding which would occur if a dam or reservoir fails. The EA provide two scenarios: • **Dry Day** – the predicted flooding which would occur if the dam or reservoir fails when rivers are at normal levels. • **Wet Day** – the predicted worsening of the flooding which would be expected if a river is already experiencing an extreme natural flood.	**Section 4.8** Flooding from reservoirs

Legend Heading	Description	L1 SFRA Report Section
Groundwater Flooding Susceptibility	**Areas Susceptible to Groundwater Flooding** – the EA's groundwater flooding susceptibility data shows the degree to which areas are susceptible to groundwater flooding based on geological and hydrogeological conditions on a 1km square grid. It does not show the likelihood of groundwater flooding occurring, i.e. it is a hazard not risk-based dataset. The dataset is categorised into the following: • <25% • >=25% <50% • >=50% <75% • >=75% Within the SFRA, JBA's Groundwater Emergence Map (5m resolution) has also been used in the assessment of groundwater flood risk and can be viewed in Figure 4-9 of the Level 1 report (Section 4.6).	**Section 4.6** Groundwater flooding **Appendix E** Summary of flood risk
Historic Layers	**Recorded Flood Outlines** – the EA Recorded Flood Outlines (RFO) show all the EA records of historic flooding from rivers, the sea, groundwater and surface water. **Historic Flood Map** – the EA Historic Flood Map (HFM) shows areas of land that have been previously subject to fluvial flooding in the area. This includes flooding from rivers, the sea, and groundwater springs but excludes surface water. If an area is not covered by the Recorded Flood Outlines or Historic Flood Map, it does not mean that it has never flooded, only that currently there are no EA records of flooding in this area. Further mapping of historic flood data can be found in the Level 1 report (Figure 4-1, Section 4.1.1), including parish-level mapping of flood incident records provided by Central Bedfordshire Council as	**Section 4.1** Historical flooding **Appendix E** Summary of flood risk

Legend Heading	Description	L1 SFRA Report Section
	Lead Local Flood Authority (LLFA). It should be noted that not all the parish-level data will be captured in the RFO and HFM shown on the SFRA Interactive Mapping Portal.	
Emergency Planning	**Flood Warning Areas** – the EA issue flood warnings to designated areas when a river level hits a certain threshold or when heavy rainfall or high tides and strong winds are forecast. This indicates that flooding is expected. **Flood Alert Areas** – the EA issue flood alerts to designated areas when there is water out of bank for the first time anywhere in the catchment and when forecasts indicate flooding may be possible. Both datasets are a polygon GIS shapefile where the above are issued; they are not flood extents.	**Section 4.9** Flood alerts and flood warnings **Appendix D** Flood alerts and flood warnings
Defences	**Spatial Flood Defences** – the EA Asset Information Management System (AIMS) spatial Flood Defence dataset shows flood defences currently owned, managed, or inspected by the EA. The dataset is categorised into types of defence, which in this Local Authority area include: • Embankment • Engineered High Ground • Natural High Ground • Wall	**Section 6.4** Major flood risk management assets in the study area **Table 6-2** Locations shown in the EA 'AIMS' data set